

IN THE CLAIMS:

1. (Currently Amended) A liquid pipetting apparatus for dispensing liquid of ~~small volume~~ a minute amount of liquid, the liquid pipetting apparatus comprising a liquid holding member for holding the liquid[[,]] in an inner portion thereof and capable of dispensing the liquid from its one end, and a driving member for moving the liquid holding member forward and backward along the dispensing direction, the liquid holding member being moved by the driving means, thereby dispensing the liquid held on the liquid holding member a washing means for washing the liquid holding member by sending washing water into the inner portion of the liquid holding member, means for dispensing the washing water held in the liquid holding member from the one end after stopping the sending of the washing water by the washing means for forming an air layer in the inner portion of the liquid holding member by drawing a given amount of air into the inner portion of the liquid holding member from the one end, after the discharging of the washing water, means for sucking the liquid into the inner portion of the liquid holding member from the one end so as to make the washing water in a separated state through the air layer, and a driving means for dispensing the liquid held to the liquid holding member from the one end thereof by moving the liquid holding member forward and backward along a dispensing direction.

2. (Cancelled)

3. (Currently Amended) A liquid pipetting apparatus as claimed in claim 1 [[2]], wherein the ~~liquid holding~~ inner portion of the liquid holding member has a taper shape of which the cross-sectional area becomes small as approaching the a dispense vent ~~provided on the one end.~~

4. (Currently Amended) A liquid pipetting apparatus as claimed in claim 1, wherein the liquid holding member is detachably connected to the driving means ~~detachably~~.

5. (Currently Amended) A liquid pipetting apparatus as claimed in claim 1, wherein the ~~liquid is dispensed~~ driving means comprises means for dispensing the liquid by rapidly moving the liquid holding member in the direction opposite to the dispensing direction of the liquid ~~by the driving member~~.

6. (Currently Amended) A liquid pipetting apparatus as claimed in claim 1, wherein the ~~liquid is dispensed~~ driving means comprises means for dispensing the liquid by moving the liquid holding member in the dispensing direction of the liquid and by stopping it rapidly.

7. (Currently Amended) A micro array manufacturing apparatus for manufacturing a micro array by dispensing on a substrate a minute volume of ~~the liquid~~ including probes capable of being connected for a target substance in the peculiarity, the micro array manufacturing apparatus comprising ~~[[:]] a liquid holding member for holding the liquid therein, and capable of dispensing the liquid from a dispensing vent provided at one end thereof; and a driving member for moving the liquid holding member forward and backward along the dispensing direction; whereby the liquid held to the liquid holding member is dispensed by moving the liquid holding member with the driving means; and further comprising a relative moving member which relatively moves the substrate and the liquid holding member in a plane orthogonal to the dispensing direction of the liquid~~ a liquid holding member for holding liquid in an inner portion thereof and capable of dispensing the held liquid from one end thereof, a washing means for washing the liquid holding member by

sending washing water into the inner portion of the liquid holding member, means for dispensing the washing water held in the liquid holding member from the one end after stopping the sending of the washing water by the washing means, means for forming an air layer in the inner portion of the liquid holding member by drawing a given amount of air into the inner portion of the liquid holding member from the one end, after the discharging of the washing water, means for sucking the liquid into the inner portion of the liquid holding member from the one end so as to make the washing water in a separated state through the air layer, and a driving means for dispensing the liquid held to the liquid holding member from the one end on the substrate by moving the liquid holding member forward and backward along a dispensing direction.

8. (Currently Amended) ~~A micro-array manufacturing~~ A liquid pipetting apparatus as claimed in claim 1 [[7]], wherein a liquid container for accommodating the liquid is formed in such a manner that a liquid surface is in direct contact with the atmosphere where the liquid supplied to the liquid holding member is accommodated, is formed in such a manner that the liquid surface is opened so as to contact it to atmosphere directly, the liquid holding member has an other side which is made an opening end at opposite side to the dispense vent, the opening end is formed so as to soak it in the liquid in the liquid container, and the liquid is supplied in the liquid holding member from the liquid container under the capillary action.

9. (Cancelled)

10. (Cancelled)

11. (Currently Amended) ~~A micro array manufacturing~~ A liquid pipetting apparatus as claimed in claim 1 ~~[[10]]~~, wherein the driving member ~~is made~~ comprises a member for adding thermal energy to the liquid held in the liquid holding member.

12. (Cancelled)

13. (Cancelled)

14. (Currently Amended) A micro array manufacturing method for manufacturing a micro array by ~~minutely~~ dispensing on a substrate a minute volume of liquid including probes capable of being connected in peculiarity for a target substance, comprising a supplying step for supplying the liquid in the liquid holding member from the opening vent of the liquid holding member opposite to the dispensing end by capillary action; a dispensing step for dispensing the liquid from a dispensing vent by generating the dispensing pressure to the liquid in the inner portion of the liquid holding member; and a step for relatively moving the substrate and the liquid holding member in a plane orthogonal to the dispensing direction of the liquid from one end of the liquid holding member for holding the liquid therein, the liquid including probes capable of being connected for a target substance in the peculiarity, the micro array manufacturing method comprising a washing step for washing the liquid holding member by sending washing water into the liquid holding member, a step for stopping the sending of the washing water, a step for dispensing from the one end the washing water held in the inner portion of the liquid holding member, a step for forming an air layer in the inner portion of the liquid holding member by drawing in a given amount of air in the inner portion of the liquid holding member from the one end thereof, a step for sucking the liquid into the inner portion of the liquid holding member from the one end so as to make the

washing water in a separated state through the air layer, and a step for dispensing the liquid held to the liquid holding member from the one end thereof on the substrate by moving the liquid holding member forward and backward along a dispensing direction.

15. (New) A liquid pipetting apparatus as claimed in claim 8, wherein the liquid holding member is supplied with the liquid therein from the liquid container under capillary action.

16. (New) A liquid pipetting apparatus as claimed in claim 1, wherein the liquid is sucked in the inner portion of the liquid holding member when the liquid discharge means moves the given amount of the liquid to a lower side.

17. (New) A micro array manufacturing apparatus as claimed in claim 7, further comprising means for moving the substrate relative to the liquid holding member on a plane orthogonal to the direction of which the liquid is dispensed from the one end.

18. (New) A micro array manufacturing apparatus as claimed in claim 7, wherein the inner portion of the liquid holding member has a taper shape of which the cross-sectional area becomes small as approaching a dispense vent provided on the one end.

19. (New) A micro array manufacturing apparatus as claimed in claim 7, wherein the liquid holding member is detachably connected to the driving means.

20. (New) A micro array manufacturing apparatus as claimed in claim 7, wherein the driving means comprises means for dispensing the liquid by rapidly moving the liquid holding member in a direction opposite to the dispensing direction of the liquid.

21. (New) A micro array manufacturing apparatus as claimed in claim 7, wherein the driving means comprises means for dispensing the liquid by moving the liquid holding member in the dispensing direction of the liquid and by stopping it rapidly.

22. (New) A micro array manufacturing apparatus as claimed in claim 7, wherein a liquid container for accommodating the liquid is formed in such a manner that a liquid surface is in direct contact with the atmosphere.

23. (New) A micro array manufacturing apparatus as claimed in claim 22, wherein the liquid holding member is supplied with the liquid therein from the liquid container under a capillary action.

24. (New) A micro array manufacturing apparatus as claimed in claim 7, wherein the driving member comprises a member for adding thermal energy to the liquid held in the liquid holding member.

25. (New) A micro array manufacturing apparatus as claimed in claim 7, wherein the driving means comprises means for changing an interior shape of the liquid holding member.

26. (New) A micro array manufacturing apparatus as claimed in claim 7, wherein the liquid is sucked in the inner portion of the liquid holding member when the liquid discharge means moves the given amount of the liquid to a lower side.

27. (New) A liquid discharging method for dispensing a minute volume of liquid from one end of the liquid holding member for holding the liquid therein, the liquid discharging method comprising a washing step for washing the liquid holding member by

sending washing water into the liquid holding member, a step for stopping the sending of the washing water, a step for dispensing from the one end the washing water held in the inner portion of the liquid holding member, a step for forming an air layer in the inner portion of the liquid holding member by drawing in a given amount of air in the inner portion of the liquid holding member from one end of the liquid holding member, a step for sucking the liquid into the inner portion of the liquid holding member from the one end so as to make the washing water in a separated state through the air layer, and a step for dispensing the liquid held to the liquid holding member from the one end on the substrate by moving the liquid holding member forward and backward along a dispensing direction.